1351.0.55.063 - Research Paper: Australian Business Networks, Dec 2019

Latest ISSUE Released at 11:30 AM (CANBERRA TIME) 17/12/2019 First Issue
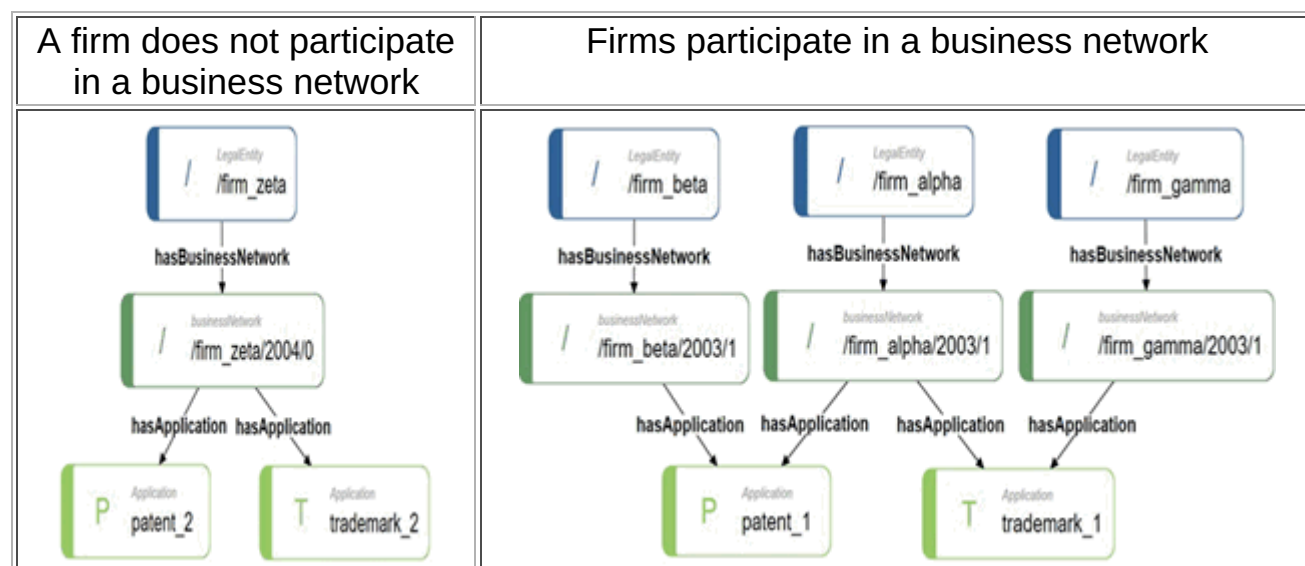
Summary

Ontology for firms participate and do not participate in a business network

Australian Business Networks

This research demonstrates the value of integrating administrative datasets to study factors that contribute to forming business networks in Australia. We describe how we use a semantic web approach to integrate and analyse data. Figure 1 shows *firm_alpha, firm_beta and firm_gamma* participate in a business network because *firm_alpha* shares at least one patent with *firm_beta* and it also shares at least one trademark application with firm_gamma. We also consider *firm_zeta* does not participate in a business network because it files at least one patent and one trademark alone.

Figure 1. Ontology

A firm does not participate in a business network	Firms participate in a business network

This study uses exponential random graph models (ERGM) and latent space models (LSM) to describe the factors contributing to the formation of business networks. We combine different sampling approaches (e.g. stratified sampling, case control sampling and one step snow-ball sampling) to overcome computational problems for the statistical network models. This research shows that it is not appropriate to use a statistical model approach that ignores the endogenous network structure of the data.

We find that larger firms are more likely to form business networks in comparison with small and medium size firms. ERGMs show that the absolute differences in the level of

productivity between two firms do not affect the probability of forming business networks. In comparison, the LSM results show that the absolute differences in the level of productivity between two firms have a slightly negative effect on the probability of forming business networks after the GFC. Firm experience also does not affect the probability of forming business networks. This is shown by the insignificant coefficients in both ERGM and LSM results. However, we find that firms with more products are more likely to form business networks.

About this Release

This research demonstrates the value of integrating administrative datasets to study factors that contribute to forming business networks in Australia. This study uses a semantic web approach to integrate and analyse data. The study uses exponential random graph models and latent space models to describe the factors contributing to the formation of business networks.

History of Changes

29/01/2021
Updated data section to improve explanations and fixed estimation results after incorporating reviewers' comments. Main changes include

- updated data section in particular summary of experimental data and missing data pattern.
- updating the sampling section by adding a figure comparing degree distributions of full and control case samples.
- updating the exponential random graph terms section.
- updating the empirical results section with more detailed descriptions
- adding complete cases analysis in Appendix A and imputation method in Appendix B.
- adding imputation method in Appendix B.
- updating summary statistics in Appendix F.
- updating model results in Appendix G and diagnostics in Appendix H.